Federal Democratic Republic of Ethiopia

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ET ISO 1741 (2004) (English): Dextrose -- Determination of loss in mass on drying -- Vacuum oven method

ISO INSIDE

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ETHIOPIAN
STANDARD

ES ISO 1741:2004

(Reaffirmed: 2012)

First edition

Dextrose- Determination of loss in mass on drying -Vacuum oven method

(Identical with ISO 1741:1980)

ICS: 67.180.10

Published by Ethiopian Standards Agency

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Sugar and Sugar Products (TC 22) and published by the Ethiopian Standards Agency (ESA).

The standard is a reaffirmation for reprint of the Ethiopian Standard ES ISO 1741:2004, Dextrose- Determination of loss in mass on drying -Vacuum oven method (Identical with ISO 1741:1980), with some editorial changes without altering the technical contents in the former text.

Dextrose — Determination of loss in mass on drying — Vacuum oven method

1 Scope and field of application

This International Standard specifies a vacuum oven method for the determination of the loss in mass on drying of dextrose.

The method is applicable to anhydrous dextrose and to dextrose monohydrate.

2 Principle

Drying of the test portion in a vacuum oven at 100 °C, at a pressure not exceeding 135 mbar*.

3 Apparatus

3.1 Analytical balance.

3.2 Dish, of metal (inert under the test conditions) or of glass, of diameter approximately 50 mm, provided with a closely fitting lid.

3.3 Electrically heated vacuum oven, capable of being maintained at 100 ± 1 °C, equipped with a calibrated thermometer and an absolute pressure gauge.

The drying oven shall provide uniform heat distribution and shall maintain the reduced pressure for several hours after the vacuum pump is turned off. The oven shelves shall be so constructed and fitted as to ensure good heat transfer to the dishes.

3.4 Vacuum pump, suitable for reducing the pressure in the oven to 135 mbar or less.

3.5 Drying train, consisting of a drying column filled with dried silica gel; the column is connected in series to a gas scrubber containing concentrated sulphuric acid, which is in turn connected to the air inlet of the drying oven.

3.6 Desiccator, containing an efficient desiccant.

4 Procedure

4.1 Preparation of the test sample

Mix the sample thoroughly and rapidly by stirring with a spatula in the sample container. If the sample container is too small for this purpose, transfer the entire sample to another pre-dried container of a suitable size to facilitate mixing.

4.2 Preparation of the dish

Place the open dish (3.2) and its lid in the oven (3.3), controlled at 100 °C for 1 h. Allow to cool to room temperature in the desiccator (3.6) and weigh to the nearest 0,000 2 g.

4.3 Test portion

Place about 10 g of anhydrous dextrose or about 5 g of dextrose monohydrate, in the dish (3.2), fit the lid and weigh to the nearest 0,000 2 g.

4.4 Determination

Place the covered dish (3.2) containing the test portion (4.3) in the oven (3.3) maintained at 100 ± 1 °C, remove the lid and leave it in the oven. Leave at the test temperature for 4 h, maintaining the pressure in the oven at not more than 135 mbar. During drying, draw a slow stream of air through the drying train (3.5) into the oven.

After 4 h, shut off the vacuum pump (3.4) and allow air to slowly enter the oven through the drying train until atmospheric pressure is obtained. Before withdrawing the dish from the oven, fit the cover. Place the covered dish in the desiccator (3.6), allow to cool to room temperature, and weigh to the nearest 0,000 2 g.

Do not put more than four dishes in the desiccator (3.6) at the same time.

Carry out two determinations on the same test sample (4.1).

NOTE — If, during or after the test, the material develops a more or less pronounced yellow colour, repeat the test at a lower temperature, and state this in the test report.

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* 1 mbar = 0,1 kPa

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5 Expression of results

The loss in mass on drying, expressed as a percentage by mass of the product as received, is equal to

$$(m_1 - m_2) \times \frac{100}{m_1 - m_0}$$

where

m_0 is the mass, in grams, of the dish and cover (4.2);

m_1 is the mass, in grams, of the dish and cover and the test portion before drying (4.3);

m_2 is the mass, in grams, of the dish and cover and the test portion after drying (4.4).

Take as the result the arithmetic mean of the two determinations.

6 Test report

The test report shall indicate the method used and the result obtained. It shall also mention all operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the result.

The report shall include all details required for complete identification of the sample.

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Ethiopian Standards Agency

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ESA's objectives are:-

- Develop Ethiopian standards and establish a system that enable to check weather goods and services are in compliance with the required standards,
- Facilitate the country's technology transfer through the use of standards,
- Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/ or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes. Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed in from our website.

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